

TEMPERATURE/REACTION MANAGEMENT SYSTEM FOR FUEL REFORMER SYSTEMS

ABSTRACT OF THE DISCLOSURE

A temperature/reaction management system comprises a reformer system and a mat material fluidly coupled to a portion of the inlet of the reforming zone of the reformer system. An inert material and/or flame arrestor can optionally be positioned before the mat material to filter particulate matter, and lower the temperature of the fuel, respectively. A method for managing the temperature and reaction of fuel in an energy conversion device comprises dispensing an air/fuel mixture through a mat material disposed against an inlet of a reformer system. The air/fuel mixture is dispensed through a reflective surface of the mat material to maintain a first temperature that is less than a second temperature necessary for a gas phase reaction to occur. The mat material inhibits the propagation of a flame into the reformer system, and allows fuel to enter the reformer system.